

AT A GLANCE

Company: Top Notch Design AB
URL: <http://topnotchdesign.eu>
Location: Stockholm, Sweden
Industry: Industrial design and product development services.

Challenges

- > Testing for products which have electronic parts and need to be water, dust and impact resistant
- > Keep client designs confidential
- > Fit, form and function testing for high-end and industrial design clientele

Solution

- > Alaris30™ 3D Printing System from Objet Geometries

Results

- > Reduced production time for prototypes
- > Provides prototypes that truly reflect the final design
- > More satisfied clients – as their products are now designed faster and more accurately



“
 The Alaris30
 allows fit testing
 in areas typically
 dominated by
 stereolithography
 ”

Johan Vestberg
 Project Manager

Top Notch Design Creates Prototypes Faster and More Accurately Using Objet 3D Printing System In-House

In the field of industrial and high-end product design, highly accurate fit, function and form testing is crucial. So too is the confidentiality of the design. Design agencies that can validate and verify design feasibility in-house can save their customers time and cost in the design process, and ensure design innovations stay secret. Top Notch Design, a Swedish industrial and high-end product development design shop that uses Objet Geometries' 3D printing technology, has found that having these capabilities in-house is a valuable tool in its development arsenal.

Top Notch Design delivers advanced prototypes and plastic products to clients, with a specialty in high end plastic parts. Many of the products they develop are particularly small and contain electronics, and often they are required to be water, dust and impact-resistant. For example, for ruggedized handheld devices, one of Top Notch Design's specialties, size is always limited. The high accuracy of Objet's Alaris30 3D Printer allows Top Notch Design to optimize and test the fitting of the PCB, sealing, mountings and more. This makes it possible for Top Notch Design to raise the bar of quality by combining industrial design and mechanical development.

Aesthetic and mechanical designs are Top Notch Design's added value in the market space. The ability to directly design a product using SolidWorks allows them to design both the aesthetic and mechanical aspects of the product in parallel, thus saving time. Within a very short period of time, a product can be designed and printed from scratch. The confidentiality of their clients' designs is ensured by using Objet's Alaris30, located in a closed part of their work shop.

Objet 3D Printer Makes the Product Real

Top Notch Design was working on a radio control for Åkerström Björbo AB, the market leader in industrial radio controls in the Nordic region, whose products are known for being well designed and meeting tough ergonomic and industrial requirements. Åkerström had approached Top Notch with a desired product which needed to be created from scratch and be presented at an important event for Åkerström. Top Notch Design had less than one month to understand the customer's needs, brainstorm, design a product and prepare photo-realistic prototypes for the exhibition.

Designing this product and creating the required prototypes required highly accurate 3D models – and they had to be produced fast in order to meet the ambitious schedule. Objet's PolyJet™ Technology-based Alaris30 Desktop 3D Printer was the first choice for model creation to authenticate the fit, function and form of the designs in-progress. Objet prototypes were used in every step of the project, from mock-up to functional prototype. According to Johan Vestberg, Project Manager for Top Notch Design, "Ergonomics in the products we design play a crucial role. We simply cannot reach understandings based on 3D CAD imagery. A prototype must be developed in order for look and feel to take hold."

Once the initial design was confirmed using 3D models printed by the Alaris30, further fit testing was needed by Top Notch to better understand the product at hand. Models produced in Objet's material on

one of Objet's Eden 3D printers was ordered from a local Service Bureau in Sweden. These rubberlike prints were used to test fitting of seals embodying the products designed.

Furthermore, mock ups of the PCB, battery and other pieces were designed, printed by the Alaris30 and tested in-house to make sure all the elements fitted. Johan Vestberg, Project Manager for Top Notch Design explains, "The parts required very tight fit testing. Since we wanted to save time and since the electronics were coming from a third supplier, we simply printed mockups of the parts in question to allow for testing here, saving us a lot of time."

"Alaris30 allows for printing prototypes that closely simulate end products. The quality of print is such that you cannot distinguish between the models and the end products, thus allowing them to be exhibited at shows." Furthermore, the parts were painted directly after printing. They were briefly sanded with 400 grid sandpaper, but no primer coating was laid on the part. This prevented tolerance issues and allowed Top Notch Design to produce sharp text and symbols (eg logos and battery symbols). Vestberg adds, "We do the painting in-house using high quality car painting sprays. This simple process allows us to generate fantastic parts swiftly."

Precise, Highly Accurate Models with a Smooth Finish

Top Notch Design needed a combination of high-end features to make their product design process as efficient as possible. According to them, Objet is the only system that provided them with all the features they needed.

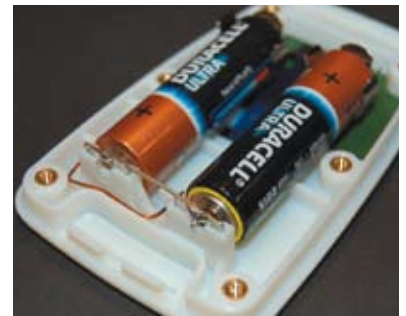
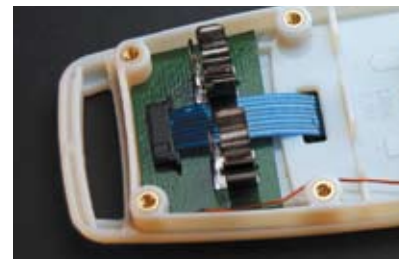
Objet offers the unique combination of precision with the closest reproduction of material characteristics and surface finish. By using Objet, Top Notch Design only needs one sort of prototype system to be able to test fitting and mechanical properties while at the same time make what they call "Photo-realistic" prototypes. Previously, they had used several prototype techniques, such as SLS for function, SLA for fitting and form, and others.

Johan Vestberg couldn't be happier with their new Objet-based prototyping capabilities, stating "In terms of surface finish, Alaris30 printed parts are better than SLA. There are no markings visible where support had been laid, allowing for smooth surfacing to take hold."

Saving Time and Pushing Boundaries

The use of Objet's Alaris30 during the development process affects many intrinsic elements important for Top Notch Design: Saves developing time by allowing form, fit and function to be verified early in the design process. Increases client confidentiality since no critical information is sent to outsiders. Easier to test innovative ideas and designs. Reduced time to test and evaluate new concepts. Highly compact system is easy to find space for and it does not disturb the office environment. Reduced the risk of tool changes.

Top Notch Design is constantly pushing the boundaries of what is possible. Thanks to Objet they can now take every project to an even higher level.



About Objet Geometries

Objet Geometries Ltd., the innovation leader in 3D printing develops, manufactures and globally markets ultra-thin-layer, high-resolution 3-Dimensional printing systems and materials that utilize PolyJet™ Polymer Jetting technology, to print ultra-thin 16-micron layers.

The market-proven Eden™ line of 3D Printing Systems and the Alaris™30 3D desktop printer are based on Objet's patented office-friendly PolyJet™ Technology. Connex500™ is based on Objet's PolyJet Matrix™ technology, which jets multiple model materials simultaneously and creates composite Digital Materials™ on the fly. All Objet systems use Objet's FullCure® materials to create accurate, clean, smooth and highly detailed 3-dimensional models.

Objet's solutions enable manufacturers and industrial designers to reduce cost of product development cycles and dramatically shorten time-to-market of new products. Objet systems are in use by world leaders in many industries, such as automotive, electronics, toy, consumer goods, and footwear industries in North America, Europe, Asia, Australia and Japan.

Founded in 1998, Objet serves its growing worldwide customer base through offices in USA, Europe and Hong Kong, and a global network of distribution partners. Objet owns more than 50 patents and patent pending inventions.

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